

CLAIMS

1. Polymer-based stopper, characterized in that it incorporates a composition or preblend based on volatile corrosion inhibitors which comprises an effective amount of at least one structuring agent consisting of a solid or pasty substance whose melting point is from 40 to 110°C, preferably from 50 to 90°C.
2. Stopper according to Claim 1, characterized in that it incorporates a composition or preblend, comprising from 1 to 90%, preferably from 20 to 60%, by weight of at least one volatile corrosion inhibitor and from 10 to 99%, preferably from 40 to 80%, of at least one structuring agent consisting of a solid or pasty substance whose melting point is from 40 to 110°C, preferably from 50 to 90°C.
3. Stopper according to either of Claims 1 and 2, characterized in that it incorporates a composition or preblend whose solid or pasty structuring agent is chosen from the group comprising solid or pasty, aliphatic and/or resinous compounds with a low melting point of between 40 and 110°C, preferably between 50 and 90°C.
4. Stopper according to one of Claims 1 to 3, characterized in that it incorporates a composition or preblend whose solid or pasty structuring agent is chosen from the group comprising mono- or polyfunctional aliphatic compounds which are linear and/or slightly branched with hydrocarbon-based chains containing at least 10 carbon atoms.
5. Stopper according to Claim 4, characterized in that it incorporates a composition or preblend whose structuring agent is chosen from the group comprising:
  - saturated or unsaturated, optionally oxidized mono- or dicarboxylic acids, their esters and their salts,
  - phosphoric, sulphonic and phosphonic acids, their esters with alcohols and their alkali metal,

alkaline-earth metal, zinc, aluminium and/or organic amine salts,

5       - cyclic or acyclic compounds of the group comprising lactones, ketones, aldehydes, amides and acetals,

      - optionally polyalkoxylated, cyclic or acyclic, primary or secondary higher alcohols with a hydrocarbon-based chain containing at least 10 carbon atoms,

10       - linear and/or slightly branched aliphatic hydrocarbons, in particular paraffins and isoparaffins,

      - polyolefins and their copolymers with low molecular masses from 3000 to 20,000 g/mol,

15       - polyglycols, in particular polyethylene glycols of molecular mass from 2000 to 10,000 g/mol.

6. Stopper according to Claim 4, characterized in that it incorporates a composition or preblend whose structuring agent is chosen from the group comprising resinous compounds with a polymeric and/or cyclic structure and which can contain, in minor proportion, aromatic derivatives and cyclic terpenes.

20       7. Stopper according to one of Claims 1 to 6, characterized in that it incorporates a composition or preblend whose structuring agent is chosen from the group of those identified in Table A below, some of which are waxes of natural or synthetic origin:

**TABLE A**

Origin of the structuring agent	Majority chemical nature of the structuring agent	Name of the structuring agent	Melting point (°C)	Density at 25°C ASTM D 1298	Penetration index at 25°C ASTM D 1321
Natural	ester (myricyl cirotate)	Carnauba	83-86	0.995	-
	ester (myricyl palmitate)	beeswax	62-65	0.955	-

Mineral	paraffinic hydrocarbons (mixture)	paraffin	50-60	0.900	15
	isoparaffinic and naphthenic hydrocarbons	micro-crystalline wax	69	0.930	29
	aliphatic hydrocarbons (mixture)	petrolatum	70-72	0.910/20°C	43-45
Synthetic	polyethylene	polyethylene wax	88	0.930	6.5
	oxidized isoparaffinic hydrocarbons	oxidized micro-crystalline wax	85	-	13
	phosphoric ester of C <sub>16</sub> /C <sub>18</sub> fatty alcohols	-	83-89	0.998	-
	polyethylene glycol	polyethylene glycol 4000	57-59	1.112/99°C	-

8. Stopper according to one of Claims 1 to 7, characterized in that it incorporates a composition or preblend comprising at least one volatile corrosion inhibitor chosen from the group comprising:
- nitrogenous derivatives and in particular, firstly, aliphatic, aromatic, acyclic or cyclic amines including dicyclohexylamine, cyclohexylamine, morpholine, diisopropylamine and benzylamine, their organic salts including the benzoates, carbamates, laurates, caprylates and succinates, or their inorganic salts including the nitrites, nitrates, carbonates, phosphates and phosphites, and, secondly, heterocycles including imidazole and its derivatives, triazoles and their derivatives, as well as hexamethylenetetramine,
  - nitrogenous oxydo derivatives including the alkali metal or alkaline-earth metal salts of nitrous acid, and

- benzoic derivatives of these metals, such as sodium benzoate.

9. Stopper according to one of Claims 1 to 8, characterized in that it consists of at least one  
5 polymer which constitutes at least 50% of its weight and which can be chosen from those of the group comprising:

- polyolefins including polyethylenes, polypropylene, polybutene and their copolymers with one  
10 or more unsaturated monomers including vinyl acetate, acrylic acid and its esters with carbon-based short-chain alcohols,

- polyvinyl chloride and its copolymers, acrylic copolymers and their derivatives, and

15 - polyamides, polystyrenes, polycarbonates, polyesters, polyurethanes, rubbers including natural rubber, styrene-butadiene and polychloroprene.

10. Stopper according to one of Claims 1 to 9, characterized in that it is incorporated by any  
20 suitable process including moulding, injection-moulding, extrusion or thermoforming.

11. Use of the stoppers according to one of Claims 1 to 10 for protecting the internal parts of hollow metal components against corrosion.

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